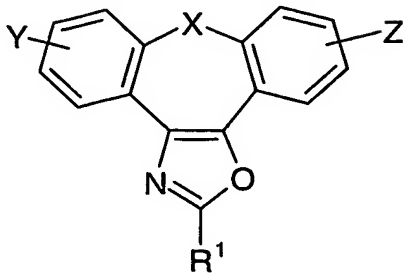
CLAIMS

1. Use of the compounds of the general formula **I**



I

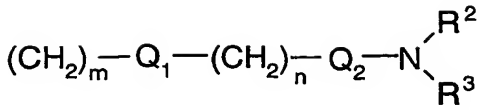
wherein

means O, S, S(=O), $S(=O)_2$, or NR^a, wherein R^a is hydrogen or a substituent selected from the group consisting of C_1-C_3-alkyl, C_1-C_3-alkanoyl, C_1-C_7-alkoxycarbonyl, C_7-C_{10}-arylalkyloxycarbonyl, C_7-C_{10}-aroyl, C_7-C_{10}-arylalkyl, C_3-C_7-alkylsilyl and C_5-C_{10}-alkylsilylalkyloxyalkyl;

Y and Z independently from each other mean one or more identical or different substituents linked to any available carbon atom selected from the group consisting of hydrogen, halogen, C_1-C_4-alkyl, C_2-C_4-alkenyl, C_2-C_4-alkinyl, halo-C_1-C_4 alkyl, hydroxy, C_1-C_4-alkoxy, trifluoromethoxy, C_1-C_4 alkanoyl, amino, amino-C_1-C_4-alkyl, *N*-(C_1-C_4-alkyl)amino, *N,N*-di(C_1-C_4-alkyl)amino, thiol, C_1-C_4 alkylthio, sulfonyl, C_1-C_4 alkylsulfonyl, sulfinyl, C_1-C_4 alkylsulfinyl, carboxy, C_1-C_4 alkoxycarbonyl, cyano and nitro;

R^1 means hydrogen, CHO, $(CH_2)_2COOH$, $(CH_2)_2CO_2CH_2CH_3$, $(CH_2)_mL$, wherein m has the meaning of an integer from 1 to 3 and L has the meaning of OH or Br;

or a substituent represented with the formula **II**:



II

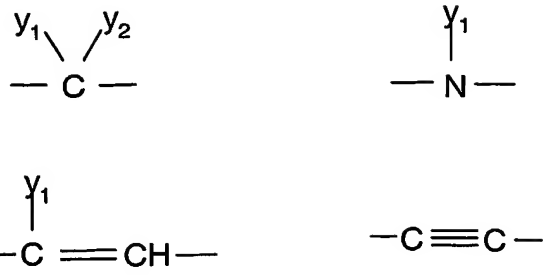
wherein

R^2 and R^3 simultaneously or independently from each other have the meaning of hydrogen, C_1-C_4-alkyl, aryl having the meaning of an aromatic ring as well as fused aromatic rings containing one ring with at least 6 carbon atoms or two rings with totally 10 carbon atoms and with alternating double bonds between carbon atoms; or together with N have the meaning of heterocycle or heteroaryl wherein heterocycle relates to five-membere or six-membere fully saturated or partly unsaturated heterocycle group containing at least one hetero atom selected from the group consisting of O, S and N and where said heterocycle can be optionally substituted with one or two substituents which are selected from halogen, C_1-C_4 alkyl, cyano, nitro, hydroxy, C_1-C_4 alkoxy, thiol, C_1-C_4 alkylthio, amino, *N*-(C_1-C_4) alkylamino, *N,N*-di(C_1-C_4-alkyl)-amino, sulfonyl, C_1-C_4 alkylsulfonyl, sulfinyl, C_1-C_4 alkylsulfinyl; and wherein heteroaryl relates to aromatic and partially aromatic groups of a monocyclic or bicyclic ring with 4 to 12 carbon atoms and at least one of them being heteroatom selected from the group consisting of O, S and N and where said heteroaryl can be optionally substituted with one or two substituents which are selected from halogen, C_1-C_4 alkyl, cyano, nitro, hydroxy, C_1-C_4 alkoxy, thiol, C_1-C_4 alkylthio, amino, *N*-(C_1-C_4) alkylamino , *N,N*-di(C_1-C_4-alkyl)-amino, sulfonyl, C_1-C_4 alkylsulfonyl, sulfinyl and C_1-C_4 alkylsulfinyl;

m represents an integer from 1 to 3;

n represents an integer from 0 to 3;

Q_1 and Q_2 independently from each other have the meaning of oxygen, sulfur or a group:



wherein substituents

y_1 and y_2 independently from each other have the meaning of hydrogen, halogen, C_1-C_4-alkyl, aryl wherein aryl has the meaning as defined above, hydroxy, C_1-C_4-alkyloxy, C_1-C_4 alkanoyl, thiol, C_1-C_4-alkylthio, sulfonyl, C_1-C_4 alkylsulfonyl, sulfinyl, C_1-C_4 alkylsulfinyl, cyano, nitro or together form carbonyl or imino group,

and of their pharmaceutically acceptable salts and solvates for the manufacture of pharmaceutical formulations for the treatment and prevention of diseases, damages and disorders of the central nervous system caused by disorders of neurochemical equilibrium of biogenic amines or other neurotransmitters.

2. Use according to claim 1, wherein the selected biogenic amines are serotonin, norepinephrine and dopamine.

3. Use according to claim 1, wherein neurotransmitter is glutamate.

4. Use according to claims 1, 2 or 3 wherein the compounds of the general formula **I** act upon the neurochemical equilibrium by regulating the synthesis, storing, releasing, metabolizing and/or reabsorption of biogenic amines or neurotransmitters and binding to their receptors.

5. Use according to claim 4, wherein the compounds of the general formula **I** show binding affinity to a receptor of one or more biogenic amines.

6. Use according to claim 5, wherein the compounds of the general formula **I** show a significant binding affinity to serotonin 5-HT_{2A} and 5-HT_{2C} receptors.

7. Use according to claim 6, wherein the compounds of the general formula **I** show binding affinity to selected serotonin receptors in a concentration of $IC_{50}<1\mu M$.

8. Use according to claim 1, wherein the compounds of the general formula **I** act as σ1 receptor ligands in a concentration of $IC_{50}<1\mu M$ by modulating central neurotransmitter system.

9. Use according to claims 1, 6 or 8, wherein the compounds of the general formula **I** show dual binding affinity to σ1 receptor and to at least one serotonin receptor selected from 5-HT_{2A} and 5-HT_{2C}.

10. Use according to claim 1, wherein the diseases and disorders of the central nervous system are selected from the group consisting of anxiety, depression and modest depression, bipolar disorders, sleeping disorders, sexual disorders, psychosis, borderline psychosis, schizophrenia, migraine, personality disorders and obsessive-compulsive disorders, social phobia or panic attacks, organic mental disorders in children, aggression, memory disorders and personality disorders in elderly people, addiction, obesity, bulimia and similar disorders, snoring, premenstrual troubles.

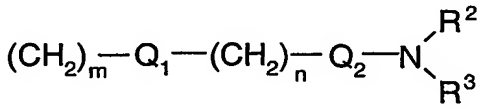
11. Use according to claim 1, wherein the damages of the central nervous system are caused by trauma, brain stroke, neurodegenerative diseases, cardiovascular

disorders such as high blood pressure, thrombosis, infarct as well as by gastrointestinal disorders.

12. Use according to claim 1 wherein X represents O, S, or NR^a, wherein R^a is hydrogen or substituent selected from the group consisting of C_1-C_3-alkyl, C_1-C_3-alkanoyl, C_7-C_{10}-aroyl and C_7-C_{10}-arylalkyl.

13. Use according to claims 1 or 12 wherein Y and Z independently from each other mean one or more identical or different substituents linked to any available carbon atom selected from the group consisting of hydrogen, fluorine, chlorine, bromine, C_1-C_4-alkyl, halo-C_1-C_4-alkyl, hydroxy, C_1-C_4-alkoxy, trifluoromethoxy, C_1-C_4-alkanoyl, amino, amino-C_1-C_4-alkyl, *N*-(C_1-C_4-alkyl)amino, *N,N*-di(C_1-C_4-alkyl)amino, thiol, C_1-C_4-alkylthio, cyano and nitro.

14. Use according to claims 1, 12 or 13 wherein R^1 has the meaning of hydrogen, CHO, $(CH_2)_2COOH$, $(CH_2)_2CO_2CH_2CH_3$, $(CH_2)_mL$ wherein m represents an integer from 1 to 3 and L has the meaning of OH or Br;
or a substituent represented with the formula **II**:



II

wherein

R^2 and R^3 simultaneously or independently from each other have the meaning of hydrogen, C_1-C_4-alkyl, aryl wherein ary has the meaning as defined above; or together with N have the meaning of heterocycle or heteroaryl selected from the group consisting of morpholine-4-yl, piperidine-1-yl, pyrrolidine-1-yl, imidazole-1-yl and piperazine-1-yl

m represents an integer from 1 to 3;

n represents an integer from 0 to 3;

Q_1 and Q_2 independently from each other have the meaning of oxygen or CH_2 group.

15. Use according to claim 1, wherein the compounds of the general formula **I**, pharmaceutically acceptable salts and solvates thereof are selected from the group consisting of:

1-oxa-8-thia-3-aza-dibenzo[e,h]*azulene;*

1,8-dioxa-3-aza-dibenzo[e,h]*azulene;*

3-(1-oxa-8-thia-3-aza-dibenzo[e,h]*azulen-2-yl)-propionic acid ethyl ester;*

3-(1,8-dioxa-3-aza-dibenzo[e,h]*azulen-2-yl)-propionic acid ethyl ester;*

2-methyl-1-oxa-8-thia-3-aza-dibenzo[e,h]*azulene;*

2-methyl-1,8-dioxa-3-aza-dibenzo[e,h]*azulene;*

*11-chloro-2-methyl-1-oxa-8-thia-3-aza-dibenzo[*e,h*]azulene;*

5-chloro-2-methyl-1-oxa-8-thia-3-aza-dibenzo[e,h]*azulene;*

11-chloro-2-methyl-1,8-dioxa-3-aza-dibenzo[e,h]*azulene;*

5-chloro-2-methyl-1,8-dioxa-3-aza-dibenzo[e,h]*azulene;*

1-oxa-8-thia-3-aza-dibenzo[e,h]*azulene-2-carbaldehyde;*

3-(1-oxa-8-thia-3-aza-dibenzo[e,h]*azulen-2-yl)-propionic acid;*

3-(1,8-dioxa-3-aza-dibenzo[e,h]*azulen-2-yl)-propionic acid;*

(1-oxa-8-thia-3-aza-dibenzo[e,h]*azulen-2-yl)-methanol;*

3-(1-oxa-8-thia-3-aza-dibenzo[e,h]*azulen-2-yl)-propane-1-ol;*

3-(1,8-dioxa-3-aza-dibenzo[e,h]*azulen-2-yl)-propane-1-ol;*

2-bromomethyl-1-oxa-8-thia-3-aza-dibenzo[e,h]*azulene;*

2-bromomethyl-1,8-dioxa-3-aza-dibenzo[e,h]*azulene;*

2-bromomethyl-5-chloro-1-oxa-8-thia-3-aza-dibenzo[e,h]*azulene;*

2-bromomethyl-11-chloro-1-oxa-8-thia-3-aza-dibenzo[e,h]*azulene;*

2-bromomethyl-5-chloro-1,8-dioxa-3-aza-dibenzo[e,h]*azulene;*

2-bromomethyl-11-chloro-1,8-dioxa-3-aza-dibenzo[e,h]*azulene;*

dimethyl-[2-(1-oxa-8-thia-3-aza-dibenzo[e,h]*azulen-2-ylmethoxy)-ethyl]-amine;*

dimethyl-[3-(1-oxa-8-thia-3-aza-dibenzo[e,h]*azulen-2-ylmethoxy)-propyl]-amine;*

dimethyl-{2-[3-(1-oxa-8-thia-3-aza-dibenzo[e,h]*azulen-2-yl)-propoxy]-ethyl}-amine;*

dimethyl-{3-[3-(1-oxa-8-thia-3-aza-dibenzo[e,h]*azulen-2-yl)-propoxy]-propyl}-amine;*

{2-[3-(1,8-dioxa-3-aza-dibenzo[e,h]*azulen-2-yl)-propoxy]-ethyl}-dimethylamine;*

{3-[3-(1,8-dioxa-3-aza-dibenzo[e,h]*azulen-2-yl)-propoxy]-propyl}-dimethylamine;*

[2-(1,8-dioxa-3-aza-dibenzo[e,h]*azulen-2-ylmethoxy)-ethyl]-dimethylamine;*

[3-(1,8-dioxa-3-aza-dibenzo[e,h]*azulen-2-ylmethoxy)-propyl]-dimethylamine;*

2-(5-chloro-1-oxa-8-thia-3-aza-dibenzo[e,h]*azulen-2-ylmethoxy)-ethyl]-dimethylamine;*

[3-(5-chloro-1-oxa-8-thia-3-aza-dibenzo[e,h]*azulen-2-ylmethoxy)-propyl]-dimethylamine;*

[2-(11-chloro-1-oxa-8-thia-3-aza-dibenzo[e,h]*azulen-2-ylmethoxy)-ethyl]-dimethylamine;*

[3-(11-chloro-1-oxa-8-thia-3-aza-dibenzo[e,h]*azulen-2-ylmethoxy)-propyl]-dimethylamine;*

[2-(5-chloro-1,8-dioxa-3-aza-dibenzo[e,h]*azulen-2-ylmethoxy)-ethyl]-dimethylamine;*

[3-(5-chloro-1,8-dioxa-3-aza-dibenzo[e,h]*azulen-2-ylmethoxy)-propyl]-dimethylamine;*

[2-(11-chloro-1,8-dioxa-3-aza-dibenzo[e,h]*azulen-2-ylmethoxy)-ethyl]-dimethylamine;* and

[3-(11-chloro-1,8-dioxa-3-aza-dibenzo[e,h]*azulen-2-ylmethoxy)-propyl]-dimethylamine.*